




# **Neah Bay Rescue Tug**

## ***Report to the Washington State Legislature***



December 1, 2000  
Publication No. 00-08-023

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**Abstract:** *Neah Bay Rescue Tug: Report to the Washington State Legislature* describes the need for additional marine safety infrastructure for the outer coast of Washington and the Strait of Juan de Fuca. The report provides a history of the issue, and describes and analyzes the operations and lessons learned from stationing a rescue tug at Neah Bay, Washington for three seasons.

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***Report to the Washington State Legislature***

Prepared by:

Washington State Department of Ecology  
Spill Prevention, Preparedness, and Response Program

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# I. Executive Summary

The outer coast of Washington and the western Strait of Juan de Fuca contain highly valuable marine resources. These areas are also vulnerable to oil spills from the large volume of marine traffic. This report focuses on an effective spill prevention measure that can significantly reduce the probability of an oil spill in this area – a dedicated rescue tug.<sup>1</sup>

Recognizing the value of the resources and their vulnerability, the 1991 Washington Legislature called for an emergency response system for the Strait of Juan de Fuca (see sidebar). In 2000, the Legislature appropriated \$1.65 million to establish a rescue tug at Neah Bay that could assist disabled commercial vessels and prevent major oil spills.

In a competitive procurement process the Department of Ecology (Ecology) selected Foss Maritime Co. to provide the tug. The tug *Barbara Foss* arrived in Neah Bay on September 18, 2000 and is expected to remain on station during the winter storm season, through at least May 18, 2001. The Coast Guard routinely dispatches the tug through an operating protocol developed by the two agencies.

The primary mission of the rescue tug is to provide timely emergency towing services for disabled vessels to prevent pollution events on Washington's northern outer coast and in the western Strait. The rescue tug is also capable of rapidly assisting vessels with propulsion and steering failures, structural casualties, fires and other problems. It can also escort high risk vessels, provide a lifesaving and spill response deployment platform during major casualties, and assist during salvage operations.

Rescue tugs have been stationed at Neah Bay a total of 11 months during the current and last two winter seasons. The tugs have been called out to assist vessels eight times, towing or escorting five of the vessels to safety. The tugs have also conducted more than 143 drills and exercises. These drills proved the effectiveness of the tugs under moderate to adverse weather conditions.

Makah Tribal facilities and navigational access to Neah Bay have proven to be both operationally and logistically suitable for a tug the size of Foss Maritime's *Barbara Foss*.

Funding is the principal issue of contention regarding stationing a dedicated rescue tug at Neah Bay. Opponents argue that the probability of a spill is low enough that a relatively expensive spill prevention measure like a dedicated tug is not a wise investment. They also are concerned that Washington trade would be diverted to other ports if the marine transportation industry were forced to pay for a tug. Proponents argue that the potential consequences of a spill on the coast are so enormous that a rescue tug is relatively cheap "insurance" in the long run. They also point to the number of vessel propulsion, steering and other problems that continue to occur near the entrance to the Strait of Juan de Fuca. (See Chapter III.)

## Legislative Mandates

The 1991 Legislature stated:

*"An emergency response system for the Strait of Juan de Fuca shall be established by July 1, 1992." (See Chapter III.)*

The 2000 supplemental budget proviso for the tug stated:

*"\$1,650,000 of the general fund—state appropriation for fiscal year 2001 is provided solely to the oil spill administration account to be used for a rescue tug. By December 1, 2000, the department shall report to the appropriate fiscal committees of the legislature on the activities of the dedicated rescue tug. The report shall include information on rescues, assists, or responses performed by the tug. The report shall also indicate the class of vessels involved and the nature of the rescue, assist, or response."²*

## Findings

1. The U.S. Coast Guard has characterized vessel salvage capability in the Pacific Northwest as “weak and slow.” A recent Coast Guard study projected that the risk of major spills will increase over the next 25 years. However, Coast Guard headquarters continues to postpone national rulemaking on vessel salvage that would, in part, address the need for a rescue tug.
2. **A rescue tug should be permanently stationed at Neah Bay.** This finding is based upon previous studies, analysis of 10 years of vessel spills and incidents, hundreds of hours of tug operations and analysis of eight rescue tug vessel assists. It also reflects the experience of other countries in deploying permanent rescue tugs.
3. In its deliberations, the North Puget Sound Oil Spill Risk Management Panel suggested that government funding would be desirable to ensure a “level playing field” for Washington’s ports in competition with other West Coast ports.
4. The federal government should provide the bulk of funding for the tug based upon the following premises:
  - The federal government is a *trustee of natural resources* in the area, including the Olympic National Marine Sanctuary, Olympic National Park, and the coastal national wildlife refuges;
  - The federal government *has designated certain species found in the area as threatened and endangered*. These species and their habitats would be affected by major oil spills;
  - The federal government has a responsibility to *protect the treaty rights of Puget Sound tribes* in their usual and accustomed fishing areas;
  - Washington is meeting a regional energy supply need. The North Puget Sound marine transportation corridor contains a regional crude oil refining center and is a *conduit of refined petroleum products to other western states*;
  - The Strait of Juan de Fuca *conveys more tonnage of cargo to and from Pacific Rim ports* than any other West Coast waterway;
  - Puget Sound is *homeport* for a large portion of the nation’s strategic naval fleet, which also poses a risk of major spills; and
  - There is *potential for international tension with Canada* should a major transboundary oil spill occur in this waterway.

## Recommendation

Ecology recommends that state funding be provided to station a rescue tug at Neah Bay while federal funding is pursued. Specifically, Ecology recommends that the legislature provide \$3 million in stopgap funding for the 01-03 Biennium to provide the rescue tug for approximately 12 months.

If long-term federal funding does not become available, the state would have the option to proceed with rulemaking. The rulemaking process would determine whether vessels transiting the northern coast and western Strait of Juan de Fuca should have a user-fee-supported rescue tug available during their passage.



## II. Risk of Major Oil Spills

The **risk** of accidents is commonly viewed as the combination of two primary components, the **probability** that an accident will occur and the **consequences** of that accident. Major oil spills are typically low-probability, high-impact events with the potential to cause serious long-term damage to natural resources, quality of life and economy. As the public places a higher and higher value on the marine environment, the consequences of a spill in terms of depleted natural resources and diminished quality of life will become more significant – increasing the risk.

In the Strait of Juan de Fuca and its ocean approaches there is a significant risk of a major oil spill due to the high vessel traffic and oil volumes. In 1999, there were a total of **12,308 commercial vessel transits** through the area – 10,560 cargo and passenger vessel transits and 1,748 oil tanker or tank barge transits. (A transit is the passage of a vessel entering or leaving Washington state waters.) In 2000, approximately **15.1 billion gallons** of oil will move through Puget Sound. The risk of spills will grow over the next 25 years as the number of vessel transits and the size of vessels increase, unless additional spill prevention measures are put in place.

### Marine Safety Considerations

Vessels transiting the western Strait of Juan de Fuca do not benefit from several key spill prevention measures that are in place eastward of Port Angeles. These include state-licensed marine pilots and tug escorts for laden oil tankers. Because of this disparity, it is prudent to target additional prevention measures for the highly vulnerable coast and western Strait.

In 1991, the Washington Legislature directed that: “An emergency response system for the Strait of Juan de Fuca shall be established by July 1, 1992” (RCW 88.46.130). After ten years and numerous evaluations and community discussions, general agreement has emerged supporting the value of a rescue tug, although some have argued the cost effectiveness of the vessel.

A funding mechanism to permanently establish a rescue tug has yet to be set up. Ecology, however, has demonstrated through this year’s bid process that this additional safety net, with a tug such as the *Barbara Foss*, can be contracted for about \$2.5 million per year. An even larger, more powerful tug with enhanced capability for salvage and fire-fighting could be placed on station for approximately \$3 million per year, considerably less than the \$3.4 to \$6 million annual cost estimated by previous studies.

### Need for Additional Spill Prevention

The U.S. Coast Guard’s Environmental Impact Work Group of the Volpe Study<sup>3</sup> found that “we must prevent oil spills on Washington’s outer coast because we cannot effectively respond to an oil spill there.”

## Significant Spills and Incidents

*These margin notes describe significant vessel spills and incidents that occurred in the general operating area of the rescue tug. They illustrate the variety of problems experienced by deep draft commercial vessels transiting the area. They all occurred while a rescue tug was not on station and in an area where vessels are not required to have a state-licensed pilot aboard. We believe that, had a rescue tug been available during these incidents, it would probably have been dispatched to assist.*

*March 1964 – the **towline** between a United Transportation barge and its tug **snapped**. The barge grounded on the beach near Moclips. The incident **spilled 1.2 million gallons of refined oil** on coastal beaches, killing a large number of razor clams and causing serious damage.*

*April 1988 – the inbound tanker Matsukaze **ran straight down through the entrance to the shipping lanes on automatic pilot and up onto the rocky coastline** at Crescent Bay west of Port Angeles, causing extensive damage to the vessel. Fortunately, the ship’s double-bottomed hull prevented any environmental damage and no oil was released.*

*December 1988 – the tug Ocean Service’s **towline snapped** resulting in the barge Nestucca drifting off of the northern entrance to Grays Harbor. The tug collided with the barge while trying to regain the tow. The barge eventually **spilled 231,000 gallons of heavy fuel oil** causing extensive environmental damage as far north as Vancouver Island’s Pacific Rim National Park.*

Congress established the Olympic Coast National Marine Sanctuary in 1994, in large part because the overall natural resource values on Washington’s pristine Northwest coast and the sensitivity of those resources to environmental damage are among the highest in the state. A major oil spill could be catastrophic due to the impacts such a spill would have on threatened and endangered species, natural resources, cultural resources, recreation, trade, commercial fishing, aquaculture, tourism, and the overall quality of life for citizens of Washington. The coast is also subject to frequent severe weather, which would make containing and cleaning up an oil spill difficult and often ineffective.

## Vessel Incident Data Highlights Risk

Since 1995, Ecology has maintained an incident, casualty and oil spill database for commercial vessels 300 gross tons or more. The information is self-reported by vessel operators and supplemented by data received from the U.S. Coast Guard. Because some incidents are not reported, these data establishe the lower boundary of the actual incident rate in the North Puget Sound Area.

This information demonstrates that large commercial vessels traveling along Washington’s coast and approaching the Strait of Juan de Fuca continue to experience propulsion, steering and other problems that could lead to a vessel casualty and oil spill. During 1999, 96 vessels transiting through Puget Sound experienced an “incident” that increased the risk of a spill.

Table 1: Number of Incidents, shows that 69 percent of the total vessel incidents occurred without prior warning of degraded propulsion or steering and when the vessel was within 12 miles of the coast. This means there is only limited time for the marine safety system to take action to mitigate the added risk presented by the vessel.

**Table 1: Number of Incidents**

Type of Incident	Number
Total incident since 1995	163
Incidents occurring without prior warning (Immediate incidents)	113 (69 percent of Total Incidents)
Incidents of higher severity occurring within Straits	73 (65 percent of Immediate Incidents)
<ul style="list-style-type: none"> <li>Incident means collision, grounding, loss of propulsion or steering</li> <li>Higher severity means higher risk of an oil spill, i.e. actual collision, allision (impact with a fixed structure, such as a pier), grounding, or complete loss of steering</li> </ul>	

Furthermore, Table 2: Severity of Incidents, shows that 65 percent of these “immediate” incidents were in the “higher severity” category. That is, they were more likely to involve a complete loss of propulsion or steering rather than a less-risky reduction in propulsion or steering reliability. This

observation is particularly true in the coastal approaches to and the western portion of the Strait, where the availability of tugs or other spill prevention and response mechanisms is low.

**Table 2: Severity of Incidents**

	Incidents of Higher Severity	Incidents of Lower Severity
Washington seacoast (approaches to Strait)	9	0
Western portion of Strait	12	2

## Federal Obligation to Minimize Risk

On our Northwest coast, the U.S. government by treaty has obligations to protect the Makah Tribe and other Indian tribes. Their culture and economy depend upon protecting the marine and coastal environment and their usual and accustomed fishing grounds from the potential devastation of major oil spills.

The federal obligation extends to important coastal resources of national value that would be damaged by oil spills, including the Olympic National Marine Sanctuary, Olympic National Park, and the coastal national wildlife refuges. The federal government has also designated several species found in the area as threatened or endangered. An independent study for the North Puget Sound Oil Spill Risk Management Panel found that the consequences of a major spill in Puget Sound would be at least \$500 to \$1,000/gallon. (See Appendix F.)

From a national economic perspective, Washington is a regional crude oil refining center that provides refined products to other West Coast states. Pacific Rim trade centered in Washington provides important national economic benefits while presenting risks to local resources.

The federal government prevailed at the U.S. Supreme Court in a suit that limited Washington state's authority to protect its waters from oil spills. Furthermore, should a transboundary spill occur, it could precipitate international tension with Canada. **Therefore, the federal government has significant responsibility to fund the Neah Bay rescue tug.**

*April 1989 – the tanker Exxon Philadelphia **lost power** and was **adrift** off the mouth of the Strait of Juan de Fuca with a load of 23 million gallons of Alaska North Slope crude oil. A tug reached the tanker approximately five hours later and towed it to Port Angeles.*

*September 1989 – the tanker Exxon San Francisco **lost power** while outbound in the Strait of Juan de Fuca. The vessel later returned to Port Angeles without further incident.*



# III. Chronology

The following is a chronology of studies, legislation, spills and vessel incidents related to the history of the Neah Bay rescue tug.

## Early Marine Safety Legislation

Washington's marine safety system in Puget Sound was established by the Legislature in 1975 in anticipation of large tank ships with Alaskan North Slope crude oil on board transiting through Puget Sound to Washington's refineries. "Laden" tankers transiting Puget Sound waters east of Dungeness Light (just east of Port Angeles) were required to have tug escorts.

They were also required to "take a Washington State licensed pilot while navigating Puget Sound and adjacent waters." In 1977, pilotage requirements were extended to other large commercial vessels operating east of Port Angeles. A 125,000 dead weight ton limit was placed on single hulled tankers proceeding east of Port Angeles.

## 1988-1989

### Backdrop for 1991 Legislative Action

The following incidents set the stage for legislators and the public to consider establishing a rescue tug at Neah Bay:

- December 1988, *Nestucca* oil spill.
- March 1989, the *Exxon Valdez* oil spill.
- 1989, *Exxon San Francisco* and *Exxon Philadelphia* disabled off the Washington coast.

## 1991

### Authorizing Legislation

In 1991 the State's precedent-setting spill-prevention legislation (House Bill 1027) passed with very strong bi-partisan support. The legislation called for the establishment of an "emergency response system" for the Strait of Juan de Fuca. Specifically, the legislation stated:

*"An emergency response system for the Strait of Juan de Fuca shall be established by July 1, 1992. In establishing the emergency response system, the administrator (of the Office of Marine Safety) shall consider the recommendations of the regional marine safety committees. The administrator shall also consult with the province of British Columbia regarding its participation in the emergency response system."* (See the conclusions of the British Columbia government's report below.)

*July 1991 – the Chinese bulk carrier Tuo Hai did not respond to Canadian Coast Guard radio communication efforts. The ship **on automatic pilot ran straight over the Japanese fish processor Tenyo Maru** northwest of Neah Bay. The Tenyo Maru was cut in half and immediately sank. The entire crew went into the frigid water; one crewmember was never found. Over **400,000 gallons of oil** was on-board the vessel and caused extensive environmental damage to coastal resources.*

*July 1994 – the bulk carrier Verbier was outbound from Vancouver, BC when it **lost power** 2.5 miles from shore in the Strait of Juan de Fuca. After an unsuccessful attempt to tow it to port by a small tug, a second larger tug was dispatched. The **towline parted** after several hours of towing. The tug "made-up" again and successfully completed the tow to Port Angeles, with the assistance of other tugs.*

December 1995 – the bulk-carrier ship *Ledra* **drifted** in the western Strait for seven and one-half hours before **emergency anchoring** 2.25 miles off Vancouver Island to prevent **grounding**. The ship had repeatedly notified authorities that repairs would take longer than estimated.

May 1996 – the bulk-carrier ship *Mount Parnitha* **drifted** in the western Strait for seven hours before **emergency anchoring** off Freshwater Bay, Washington (about 10 miles west of Port Angeles). The ship's **main engine** was **undergoing repairs**.

July 1996 – the **cruise ship** *Golden Princess* **drifted** off Neah Bay for about four hours. The ship had suffered a serious **engine room fire** losing electrical power and propulsion with **1,200 persons aboard**. Fortunately, the weather was good and the ship was eventually taken under tow to Victoria, British Columbia. The vessel was also carrying over 600,000 gallons of fuel. A tug eventually arrived on scene and towed the vessel to Vancouver for repairs.

*“The regional safety committees shall recommend to the office (Office of Marine Safety) the need for, and the structure and design of, an emergency response system for the Strait of Juan de Fuca and the Pacific coast.”* (See 1994: Regional Marine Safety Committee Report)

## 1993

### Regional Marine Safety Committees

In 1993 the Regional Marine Safety Committees for the Strait of Juan de Fuca/Northern Puget Sound and the Grays Harbor/Pacific Coast, made up of industry, tribal, and other stakeholders, issued preliminary recommendations supporting the concept of a rescue tug as part of an emergency response system. In response, the Washington State Office of Marine Safety (OMS)<sup>4</sup> formed the Emergency Towing System Task Force in August 1993.

## 1994

### Regional Marine Safety Committee Report

In June 1994, the Strait of Juan de Fuca/Northern Puget Sound Regional Marine Safety Committee issued its report<sup>5</sup> in conjunction with the OMS. In reviewing the requirements for tug escorts for tankers, petroleum barges, commercial ships and barges, the Committee stated:

*“This subcommittee does not recommend tug escorts west of Port Angeles, **provided** an adequate emergency response towing tug is stationed initially in Port Angeles, and then transferred to Neah Bay when conditions have been met to accommodate the vessel.”* (Emphasis added)

### Study of Emergency Towing Services Worldwide

In June 1994, marine expert Robert Allan prepared a *Study of Emergency Towing Services Worldwide* for OMS. The report documented the availability of rescue tugs in Alaska, several nations in northern Europe, and Japan.

### Emergency Towing System Task Force

OMS established the broad-based Emergency Towing System Task Force in 1993 to further explore the need for an emergency towing vessel for the western Strait of Juan de Fuca. The Task Force included the U.S. Coast Guard, Canadian shippers, the British Columbia government and others. The report<sup>6</sup> was issued in August 1994 with the preferred alternative of:

*“...a dedicated rescue vessel at the entrance to the Strait to provide immediate emergency assistance to disabled vessels...A dedicated rescue tug is a reasonable alternative to tug escorts in the Strait and a viable*

*Neah Bay Rescue Tug*

*means of reducing the risk of spill events in the area.”*

The study recommended a dedicated rescue tug with a pulling capacity of between 100 and 150 tons depending on whether “severe” or “extreme” duty criteria is selected.

### **Olympic Coast National Marine Sanctuary Established**

In July 1994, Congress recognized the unique and relatively pristine environment of Washington’s outer coast by establishing the Olympic Coast National Marine Sanctuary. In recognition of the threat to the Sanctuary of oil spills, a voluntary vessel Area To Be Avoided was established to provide a buffer by moving vessels further off shore.

## **1995**

### **Canadian Tug Initiative**

In April 1995, the Canadian Council of Ministers of the Environment<sup>7</sup> undertook a comprehensive review of regional risks, conditions, options, and costs for using escort, rescue and salvage tugs. The final report included discussions of the Strait of Juan de Fuca and its western approaches. One of the recommendations of the report was for a 70-ton pulling capacity tug to be stationed at either Bamfield or Victoria, British Columbia, for use as an escort/salvage tug to fill

*“...towing capability deficiencies, considered to be the most severe...”*

That recommendation has not been acted upon.

### **British Columbia Tug Study**

A September 1995 report to the Ministry of the Environment found that pre-positioned rescue tugs were already in place in Europe and other locations. It also supported the need for a rescue tug.

## **1997**

### **International Tug of Opportunity System**

In 1997 a marine industry coalition established the International Tug of Opportunity System (ITOS), paid for by the industry through fees collected by the Puget Sound Marine Exchange. Participating tugs were equipped with electronic transponders, which made them readily identifiable on computer tracking screens at the Marine Exchange and the U.S. Coast Guard’s Puget Sound Vessel Traffic Service. While the system does not place any more tugs in service, it is designed to allow for rapid identification and contact with tugs that may be able to assist disabled vessels.

### **Neah Bay Rescue Tug**

*November 1996 – the container ship Gao He **drifted** for nearly two hours north of Cape Flattery, Washington after suffering an **engine** problem that required a **shut-down for repair**. Tug assistance was estimated to be four hours away.*

*November 1998 – the general cargo ship Aristotelis **drifted** for about three hours after **breaking down** about three miles off Cape Flattery. The ship drifted at about four knots towards Vancouver, Island, **refusing a Canadian Coast Guard offer for an emergency tow-assist**. The ship finally **anchored** about two miles from shore.*

*February 1999 – the Hanjin Elizabeth **lost power** off Cape Hook on Vancouver Island when a spare piston pin broke loose from its stowage in a storm and was tossed about the engine room. The ship **drifted for 36 hours**, passing 20 miles east of Scott Island, British Columbia. A tug dispatched to assist finally reached the ship and held the vessel’s head into the sea until the crew could make a repair. The crew restarted the engine and arrived in Washington waters under her own power with two tug escorts.*

February 1999 – (at the same time the Hanjin Elizabeth was drifting), the general cargo ship Caria’s **engines failed** and the ship began **drifting** 17 nautical miles from Brooks Peninsula towards the northern end of Vancouver Island. Severe storm to hurricane-force winds and seas prevailed in the area. Ocean-going tugs from the United States and Canada were dispatched by the Canadian Coast Guard’s Rescue Coordination Center in Victoria. The Caria **drifted 41 miles over a 19-hour period**. It came within 10 nautical miles of both Vancouver Island and Scott Islands before a towline was secured by a Canadian tug. It took the tug seven hours to arrive from Tahsis, British Columbia, approximately 80 nautical miles away. The severe sea conditions made it difficult to secure a towline; the task took over five hours. Based on drift rate, there were about two hours to spare before the ship could have grounded.

## Scoping Risk Assessment (Volpe Study)

The Coast Guard-sponsored Scoping Risk Assessment (Volpe Study) found that as a vessel moves westward from Port Angeles to the outer coast, the following progressive changes affect the probability and consequences (i.e. risk) of major oil spills:

- Certain spill prevention measures – tug escorts for tankers and state-licensed pilots – are not required.
- The likelihood of a casualty is increased as sea-state and weather conditions become more severe.
- Spill response resources are less available.
- Because of weather and sea-state conditions, spill response measures are less effective.
- Natural resources are more economically valuable.

Dr. Sharon Christophersen of the National Oceanic and Atmospheric Administration (NOAA) chaired the Environmental Impact Work Group of the Volpe Study. Dr. Christophersen communicated one of the work group’s findings that “we must prevent oil spills on Washington’s outer coast because we cannot effectively respond to an oil spill there.”

## 1999

### New Carrissa Oil Spill & Interim Tug Funding

In February 1999, the bulk freighter *New Carrissa* grounded on the Oregon Coast, causing a 40,000-gallon oil spill. This incident renewed the call for a rescue tug at Neah Bay. In February 1999, Congressman Norm Dicks secured funding for the tug from the U.S. Department of Defense through the U.S. Navy. A tug was contracted and in place from March through April 1999. (See Chapter IV.)

### ITOS Evaluation

An August 1999, review of the ITOS by the U.S. Coast Guard<sup>8</sup> confirmed Ecology’s earlier conclusion, that the ITOS provided a relatively small “incremental improvement to the existing safety system.” Using assumptions regarding the ability and willingness of participating tugs to assist a drifting vessel, the report concluded that the “risk eliminated by ITOS” in “western waters” (western Strait of Juan de Fuca and Juan de Fuca entrance) to be nine percent. This number was questioned by some observers who pointed out that the ITOS system partially duplicated the vessel tracking function of Tofino (Canada) and Puget Sound Vessel Traffic Services and did not physically add any new rescue capability to the waters around Cape Flattery.



## Coast Guard Regulatory Assessment

In November 1999, a report titled *Regulatory Assessment: Use of Tugs to Protect Against Oil Spills in the Puget Sound Area* was prepared for the U.S. Coast Guard. While the report did not include oil spill clean up costs and environmental damage assessments in the cost-benefit analysis portion of the report, it found that:

- Vessel traffic in the Strait of Juan de Fuca will increase by 50 percent by the year 2025.
- The quantity of oil transiting the Strait in ships of all types will increase from 360 million barrels to 457 million barrels by the year 2025.
- The probability of a spill over 10,000 gallons from collisions and groundings of commercial vessels would increase from one every five years currently to one every 3.6 years by 2025 if additional risk mitigation measures are not put in place.
- The spill probability from tankers would decrease by threefold over this time period, but this reduction in risk is expected to be offset by increased spills from dry cargo vessels.

In addition, the report concluded that while ITOS was the least expensive alternative reviewed for reducing oil spills, it was also the least effective option. In comparison, a dedicated rescue tug was found to be moderately expensive and would avert a moderate quantity of spilled oil.

## 2000

### Follow-up to the U.S. Coast Guard's Regulatory Assessment

In February 2000, Ecology commissioned a supplemental report titled *Allocation of Tug Costs on a "Per Transit Basis."*<sup>9</sup> (See Appendix E). The per transit cost, based on \$4 million and \$6 million dollar per year estimates for a rescue tug, ranged from \$369 to \$553 per transit in 2000 and **decreased** to \$240 to \$360 per transit by 2025 (not accounting for inflation). The bid process for the current tug contract, however, demonstrated that a tug can be put in place for as low as \$2.5-\$3 million per year, depending on performance standards.

### Rescue Tug Interim Funding

During the winter of 1999-2000, Washington state, through the Governor's emergency fund, and the federal government provided funding to station a dedicated rescue tug at Neah Bay, Washington. The *Tenyo Maru* Oil Spill Natural Resources Trustees provided additional funding to extend rescue tug coverage at Neah Bay through the spring of 2000.

In the spring of 2000, the Washington State Legislature provided \$1.65 million to position a rescue tug at Neah Bay for the September 2000 - May 2001 winter season.

### Neah Bay Rescue Tug

*August 2000 – the bulk carrier ship Marine Express departed Vancouver, British Columbia bound for Bangladesh, loaded with grain. A **fire** was discovered **in the engine room** and the main engine was shut down when the ship was in the western Strait. The **fire was not reported to authorities**. Three men found refuge in the lower engine room. Fortunately, the engine room ventilation fans remained on and provided fresh air. The ship's crew re-entered the engine room with protective gear to search for the other men, fearing them dead. The fire was finally extinguished when a hose was brought to bear on it from above. No serious injuries were reported. The ship **drifted** for about two and one-half hours.*

*September 2000 – the bulk carrier ship Selendang Kasa and the 57-foot purse seiner Anthony G collided in fog near the western entrance to the Strait of Juan de Fuca. The collision resulted in no significant injuries, but the Anthony G incurred substantial damage to its wheelhouse. Fortunately, the Anthony G, with three persons on board, did not sustain any damage below the waterline and no oil spilled. The vessel was later escorted back to Bellingham, Washington.*

### **North Puget Sound Risk Management Panel**

In July 2000, the North Puget Sound Long-Term Oil Spill Risk Management Panel (NPS Panel) issued its *Final Report and Recommendations*. The NPS Panel, made up of 22 stakeholders, met from September 1999 to July 2000. The Panel was formed through a Memorandum of Understanding between the U.S. Secretary of Transportation and the Governor of Washington and co-chaired by the U.S. Coast Guard and Ecology (as non-voting members).

The NPS Panel adopted 24 recommendations to improve marine safety in the waters of the Washington Coast, Strait and northern Puget Sound. Six additional measures were considered, but not adopted. One of those considered was the recommendation for a “year-round, federally-funded, dedicated rescue tug at the entrance to the Strait of Juan de Fuca.” (See Appendix B.) Three-fourths of the Panel members supported this proposed recommendation. However, the Panel’s ground rules required a consensus of the members, with no more than two dissenting votes, to pass a recommendation. The rescue tug proposal received four “nay” votes and did not pass.

# IV. Operations 1999-2001

## March – April 1999

One of two Crowley Marine Services tugs, *Sea Valiant* or *Sea Breeze* was stationed at Neah Bay during this short season with federal funds.

DESCRIPTION	SEA BREEZE	SEA VALIANT
<u>Dimensions</u>		
Length	126'	128.5'
Breadth	34'	38'
Depth	16.5'	19.9'
Tonnage	198 GT	199 GT
<u>Main Engines</u>	2 Cat Incline 6 Cyl 3606	2 EMD 20-645-E5
Horse Power	4962 max HP	5750 max HP
Bollard Pull Ahead	102,580 lbs	175,000 lbs
Bollard Pull Astern	70,000 lbs	103,000 lbs
Expected Speed*	11.5 Kts	12.0 Kts
<u>Dates on Station</u>	1 Mar - 7 Mar	8 Mar - 30 Apr
* Speed based on performance in light to moderate weather		

*Figure 1: Characteristics of the tugs Sea Breeze and Sea Valiant presented for comparison to the Barbara Foss. (From the U.S. Coast Guard's 1999 report on the interim rescue tug [See Appendix I]).*

The rescue tug responded to two vessel emergencies between March 1, 1999, and April 30, 1999:

### ***Bouchard Barge No. 230 Incident***

On the evening of March 28, 1999 the tank barge *Bouchard No. 230* was separated from the tug *Ralph E. Bouchard* when the towline parted in a storm. The barge was not carrying an oil cargo, but had diesel aboard to fuel its generators. The position was about 17.5 miles off the coast, west of La Push, Washington. Two men were aboard the drifting barge, which was taking water over its deck. During the evening of March 28 and early morning of March 29, despite attempts by the tug to reconnect, the *Bouchard No. 230* drifted northeast about 19 miles at 2.3 knots. By 4:15 a.m., the drifting barge was about 13.5 miles west of Cape Alava, Washington. The rescue tug *Sea Valiant* was dispatched at 9:15 p.m. on March 28 and arrived on-scene at 1:15 a.m. on March 29, standing by to assist. The *Ralph E. Bouchard* was finally able to retrieve the *Bouchard No. 230* at 8:15 a.m. on March 29 and made its way to Port Angeles, Washington under escort by the *Sea Valiant*. The *Sea Valiant* later assisted the *Ralph E. Bouchard* in retrieving the broken end of the tow wire still attached to the barge. Following the incident the Captain of the *Ralph E. Bouchard* spoke very supportively of the rescue tug. He told an Ecology investigator that it provided a comfort factor during the hazardous conditions his people worked in. See Appendix C for details of this incident.

### ***Neah Bay Rescue Tug***

## ***Aleutian Challenger Incident***

On April 5, 1999, the 78-foot fishing vessel *Aleutian Challenger* lost propulsion 3.6 miles northwest of Tatoosh Island as a result of running out of fuel. The rescue tug, *Sea Valiant*, responded, but the Captain of the *Aleutian Challenger* refused the tug's assistance because a commercial agreement for towing services could not be reached. The distant, potential destination for the fishing vessel, and the associated high cost of contracting with the tug for a long tow was a factor. A U.S. Coast Guard boat stationed at Neah Bay later towed the fishing vessel into Neah Bay when it drifted near the shipping lanes. During the time that the *Aleutian Challenger* was adrift, the *Sea Valiant* stood by ready to assist, and eventually escorted the U.S. Coast Guard boat, with the *Aleutian Challenger* in tow, to the entrance to Neah Bay.

## **December 1999 – June 2000**

The tug stationed at Neah Bay as a dedicated rescue tug was the *Barbara Foss*, a 4,300 horsepower twin-screw tugboat rated for ocean service. The tug is 126 feet long, 35 feet wide, and has a maximum draft of 16 feet when fully loaded with fuel. It has two diesel main engines that drive two conventional propellers to create 142,600 pounds of pull. A recent refit enhanced the maneuverability of the tug with the addition of nozzles on its twin screws (propellers). The tug's free-running speed is approximately 12.5 knots. It has fuel capacity of over 100,000 gallons of diesel, allowing for extended tows. Foss has previously used the tug for a wide range of tasks, including rescue work and towing heavy barges and ships on trans-ocean voyages.



*Figure 2: The Foss tug Barbara Foss, at the pier in Neah Bay.*

The rescue tug *Barbara Foss* responded to three vessel emergencies between December 16, 1999, and June 20, 2000:

### ***Clipper Arita Incident***

On February 22, 2000, a large dry-cargo ship, the *Clipper Arita*, lost propulsion approximately 10 miles west of Cape Flattery and started to drift northeast toward shore (see Rescue Tug Response Report Map #0222-1, Appendix H). The rescue tug *Barbara Foss* was underway in 11 minutes and was able to make over 10 knots in 12 to 17 foot seas proceeding toward the disabled vessel. The vessel crew was able to repair their propulsion system just as the *Barbara Foss* arrived on scene, 80 minutes after getting underway. The *Clipper Arita* had a fuel oil capacity of about 235,000 gallons.

### ***Sharlene K Incident***

On May 8, 2000, the *Barbara Foss* towed the Canadian fishing vessel, *Sharlene K*, to safety in Neah Bay after the vessel ran out of fuel near the entrance to the Strait (see Rescue Tug Response Report Map #0508-1, Appendix H). Wind, wave and swell were from the west, which would have pushed the *Sharlene K* towards the coast of Vancouver Island. The *Barbara Foss* reached the vessel 50 minutes after getting underway. While out of fuel, the *Sharlene K* had lube and hydraulic oils aboard that would have been a risk to the environment had the vessel grounded.

### ***Virtue Incident***

On June 6, 2000, a large bulk-cargo ship, the *Virtue*, bound for Vancouver, British Columbia, lost propulsion approximately 30 miles west of Cape Flattery and started to drift to the north (see Rescue Tug Response Report Map #0607-1, Appendix H). The U.S. Coast Guard directed the master of the *Virtue* to arrange for tug assistance due to repeated propulsion failures on the ship. The *Virtue's* master contracted with the rescue tug *Barbara Foss*. The *Barbara Foss* escorted the ship into the Strait of Juan de Fuca and finally, after repeated propulsion failures, towed the ship to Esquimalt, British Columbia for inspection by Transport Canada Marine Safety officials. The response took over 29 hours to complete. The *Virtue* had a fuel oil capacity of about 468,000 gallons. (See Appendix D for details of this incident.)

## **September 2000 – May 2001**

The 2000-2001 operations plan for the rescue tug has been altered from that of 1999-2000. Instead of emphasizing drills, the *Barbara Foss* will be sent out to meet and escort vessels when the vessel's history suggests the need.

The rescue tug, *Barbara Foss*, responded to two vessel emergencies between September 18, 2000, and October 31, 2000:

### ***Neah Bay Rescue Tug***

## ***Ever Given Incident***

The *Barbara Foss* made its first deployment of the season to assist a drifting vessel on October 16, 2000. The 885-foot container ship *Ever Given* shut down main engines about six miles off the Washington Coast, 26 miles south of the western entrance to the Strait of Juan de Fuca. The ship, with a fuel oil capacity of about 1.4 million gallons, was drifting to accomplish repairs to its fuel heating system. The U.S. Coast Guard Captain of the Port issued an order to the Captain of the *Ever Given* requiring a tug escort to Port Angeles, Washington. The *Barbara Foss* was dispatched and escorted the ship safely to anchor at Port Angeles.

## ***Daewoo Spirit Incident***

The *Barbara Foss* again deployed on October 26, 2000 to assist the 941-foot bulk carrier *Daewoo Spirit*. The *Daewoo Spirit*, with a fuel oil capacity of about 1.2 million gallons, was having intermittent steering losses near the western entrance to the Strait of Juan de Fuca. The U.S. Coast Guard could not determine the cause due to the crew's limited English-language ability. The Coast Guard therefore required the ship's Master to undertake a tug escort to anchorage at Constance Bank, British Columbia. The *Barbara Foss* undertook the escort.

## ***Mediterranean Frigo Safety Issue***

On October 27, 2000, the refrigerated cargo ship, *Mediterranean Frigo*, reported on their arrival notice that they were approaching the Strait of Juan de Fuca, bound for Seattle, without nautical charts of the area. In response, the U.S. Coast Guard issued an order requiring the ship to: (a) obtain the necessary charts before passing Buoy "J" (at the entrance to the Strait) or, (b) get a tug escort from Buoy "J" to the pilot station at Port Angeles and then take on nautical charts. Early on the morning of October 28, the *Barbara Foss* was called into service to deliver nautical charts to the ship before it arrived at Buoy "J" so that the ship could transit the Strait and Puget Sound safely and in compliance with international regulations. The *Barbara Foss* then escorted the ship to a point five miles east of Buoy "J" to further ensure safety. (Lack of charts is not an isolated occurrence. In 1999 alone, Ecology cited two tankers for coming to Puget Sound ports without adequate charts.)

## V. Funding 1999-2001

For portions of three seasons the rescue tug has been funded from state and federal sources while on standby and during drills. However, once a decision has been made to initiate an actual towing operation, four possible funding sources become available:

- A routine contract negotiated between the vessel owner and the private sector rescue tug operator;
- The vessel's insurance company (such as one of the Lloyds of London "P&I" Clubs) will reimburse the tug's owner if assistance is required for salvage operations;
- The Coast Guard can open the federal Oil Spill Liability Trust Fund (OSLTF) if there is a threat of an oil spill; or
- The State's Oil Spill Response Account can be used during oil spill emergencies. The vessel operator is then billed to recover the costs.

### March – April 1999

The U.S. Navy, through its SupSalv organization, stationed an interim rescue tug at Neah Bay in March and April of 1999. This was done in response to public pressure and the February wreck of the *New Carrissa* on the Oregon Coast. Federal funding was secured in February 1999 through the efforts of Congressman Norm Dicks.

### December 1999 – June 2000

From December 1999 to June 2000, the federal government (led by the U.S. Navy and the Coast Guard) and the state of Washington contracted with Foss Maritime Services. The contract covered commercial tug services at the western end of the Strait of Juan de Fuca, including rescue, standby and operational drills. The *Tenyo Maru* Oil Spill Natural Resources Trustees provided additional funding to extend rescue tug coverage at Neah Bay through the spring of 2000.

Federal funding	=	\$1,000,000
State funding	=	100,000
Tenyo Maru funding	=	400,000
<b>Total Costs</b>	<b>=</b>	<b>\$1,500,000</b>
<b>Length of Coverage</b>	<b>=</b>	<b>178 days</b>

### September 2000 – May 2001

The Washington Legislature provided \$1,650,000 for the winter of 2000-2001 to again station a dedicated rescue tug at Neah Bay, Washington. The Foss tug *Barbara Foss* was selected. The tug will be deployed from September 18, 2000 until May 18, 2001. Ecology was able to achieve eight months of rescue tug coverage through the competitive bid process.  
*Neah Bay Rescue Tug*





## VI. Capability Evaluation

An important factor in selecting a tug is its bollard pull. Bollard pull is a measure of the towing power of a tug boat. Crowley Marine Services' *Sea Valiant* has 87.5 tons of bollard pull and 5,750 horsepower. Foss Maritime's *Barbara Foss* has 70 tons of bollard pull and 4,300 horsepower.

For comparison, the April 1995 report to the Canadian Ministers of the Environment completed by Robert Allan recommended a minimum of 70 tons of bollard pull for a Strait of Juan de Fuca and Vancouver Island rescue tug. Washington's August 1994 Emergency Towing System Task Force recommended a tug with a 100 to 150 ton bollard pull, depending on the weather and sea state conditions in which the tug was expected to operate.

Prince William Sound, Alaska, which has lower volume and less diverse vessel traffic than Puget Sound, has systematic rescue tug coverage. In addition, three Alert-class Crowley tugs (built in Anacortes) with 10,200 horsepower and a 150-ton bollard pull, were delivered to Prince William Sound in 2000. These tugs are especially designed to operate in that area and carry out multiple missions including the ability to arrest the drift of a fully laden oil tanker under storm conditions.

### March – April 1999

During this two-month season, the rescue tug conducted 100 drills and responded to two vessel emergencies. The U.S. Navy collected data on the drills and the Thirteenth U.S. Coast Guard District prepared a report on the interim rescue tug (see Appendix I).

**Table 3: 1999 Rescue Tug Statistics**

Value Measured (units)	Minimum	Maximum	Average
Time to get underway (minutes)	0	45	10
Time to arrival at ship (minutes)	13	210	80
Distance traveled to ship (nautical miles)	Not Available	Not Available	Not Available
Underway Speed (knots)	Not Available	Not Available	11.3
Effective Speed (from tug notification) (knots)	Not Available	Not Available	9.6
Wind Speed (knots)	0	40	13.3
Wave Height (feet)	0	22	3.3

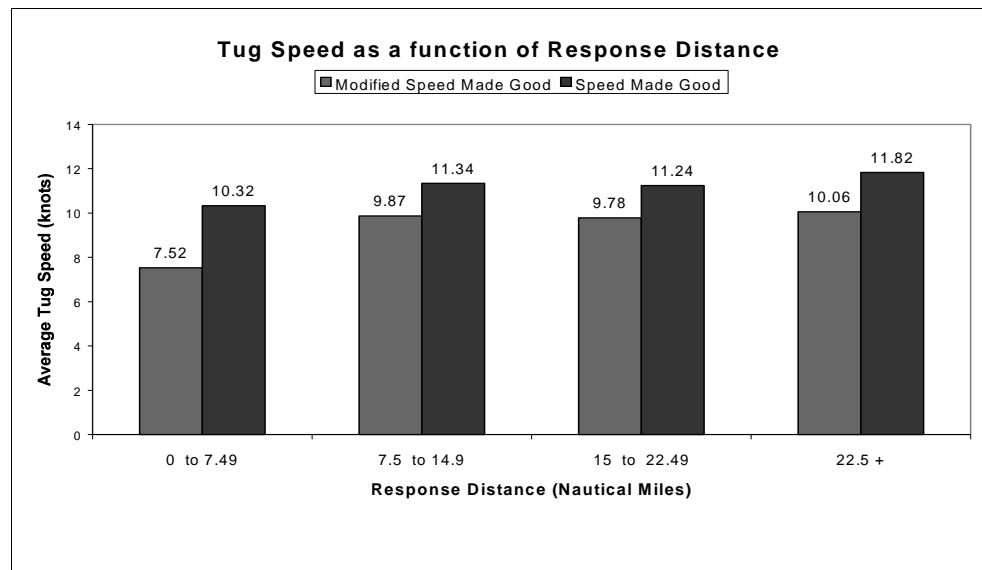


Figure 3: Adapted from the U.S. Coast Guard's 1999 interim rescue tug report.

## December 1999 – June 2000

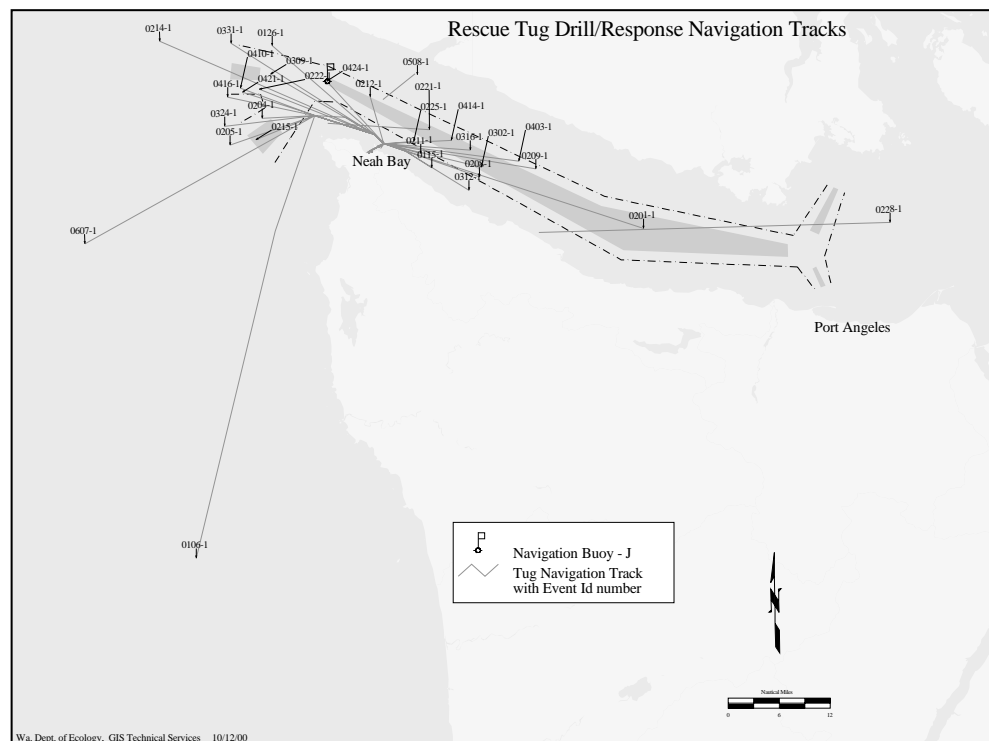


Figure 4: Chart showing rescue tug track lines for drills and responses from December 15, 1999 to June 9, 2000. (See also Appendix H.)

The rescue tug performed 43 drills between December 16, 1999, and June 20, 2000:

- Twenty-seven (27) drills tested the tug's ability to respond to a fictitious drifting vessel in various locations and weather conditions (see Rescue Tug Drill Report Maps, Appendix H). Four drills involved Navy vessels

that simulated a drifting vessel by shutting off their propulsion plants.

- Two drills consisted of escorting a “high-risk” vessel from three miles west of the Strait entrance past Duntze and Duncan Rocks, the navigational obstructions off Cape Flattery (see Appendix G).
- Seven drills consisted of deploying an “Orville Hook” device from the tug, simulating recovery of a drifting barge or ship by snagging the bridle or anchor chain (see Appendix G).
- Two drills simply tested the speed of the tug in existing sea conditions (see Appendix G).
- One drill tested the fire pumps and hoses of the tug for use in assisting a fictitious fishing vessel in Neah Bay (see Appendix G).
- Four drills self-initiated by the tug Captain involved traveling to a given location at best speed (see Appendix G).

Additional drills, using commercial vessels and U.S. Coast Guard vessels to pass a tow line to, were discussed at the beginning of the 1999-2000 tug deployment season, but no commercial vessel was willing to participate and Coast Guard resources were not available. One drill with a Navy ship involved passing a heaving line to the vessel and picking up passengers (see Rescue Tug Response Report Map #0221-1, Appendix H).

## Analysis

The statistics in the following table were derived from the 27 deployment drills and three responses (a total of 30 deployments) that the Barbara Foss accomplished.

**Table 4: 1999-2000 Rescue Tug Statistics**

Value Measured (units)	Minimum	Maximum	Average
Time to get underway (minutes)	0	15	7
Time to arrival at ship (minutes)	33	419	95
Distance traveled to ship (nautical miles)	6.4	62	17.6
Underway Speed (knots)	8.0	13.7	11.3
Effective Speed (from tug notification) (knots)	6.9	13.7	10.2
Wind Speed (knots)	0	25	13.2
Wave Height (feet)	0	5	1.5
Swell Height (feet)	0	14	5.4

Reported wind speed, wave height and swell height were examined to determine if any of those factors significantly impacted the tug's underway speed during the 30 drills and responses accomplished. It was found that wind speed, wave and swell height had only a weak statistical relation to tug speed.<sup>10</sup> Wind speed, wave and swell height were also analyzed for impact on tug speed based on the direction of each environmental variable relative to the tug's direction of travel (impacting the tug from ahead, abeam or astern). The statistical relationships to tug speed, while stronger in some cases, were also found to be weak.<sup>11</sup> The following graphs show the tug speed versus each of the environmental factors observed by the Captains of the *Barbara Foss*.

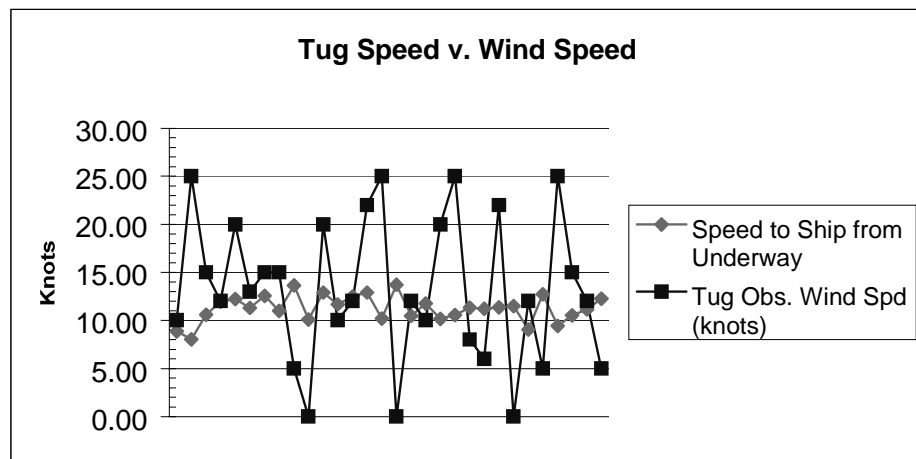


Figure 5

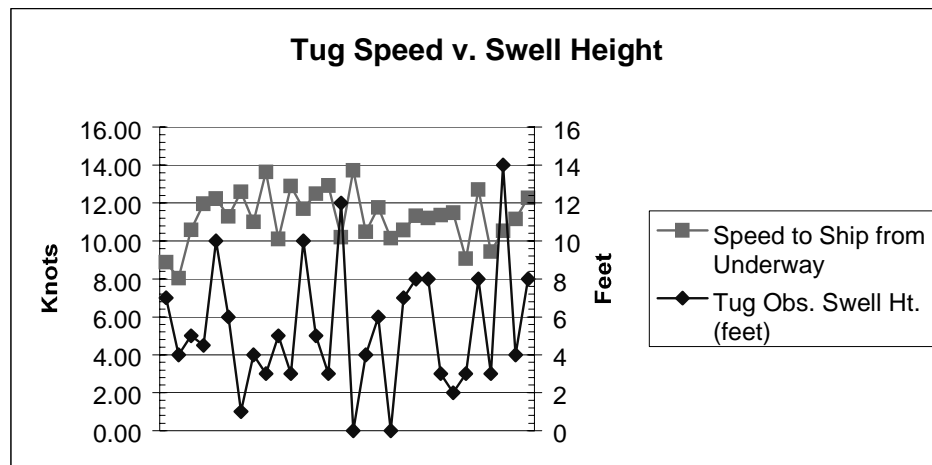


Figure 6

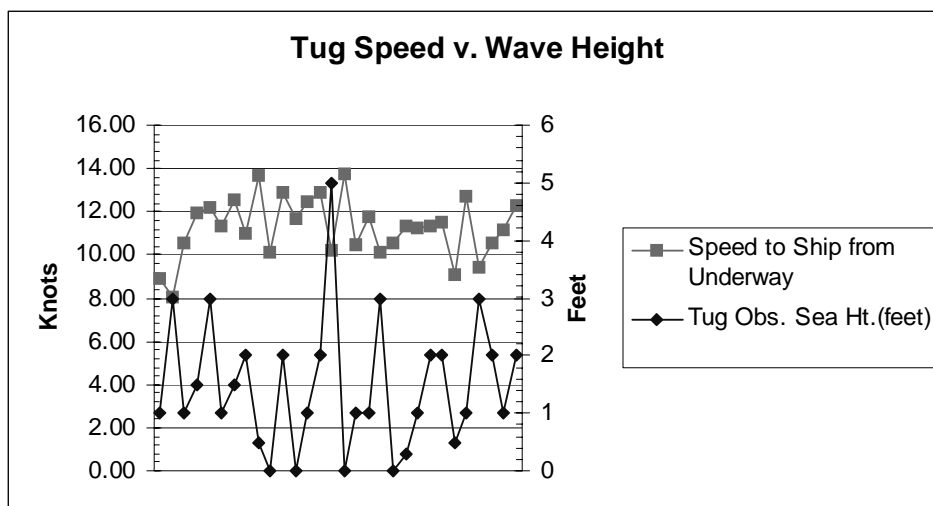


Figure 7

There were four drills in which the tug's average underway speed was reduced to below 10 knots (drill numbers 0106-1, 0115-1, 0414-1, and 0421-1, see Appendix H).

- In the first case (0106-1) the *Barbara Foss* made the longest exercise transit of the season (62 miles) into approximately 7-foot seas from the west and southwest, reducing its speed to about 8.9 knots.
- In the second case (0115-1), tug speed was reduced to 8.0 knots because the tide in Neah Bay was low, requiring the tug to move slowly past the rock pinnacles near the entrance to Neah Bay losing about 15 to 20 minutes.
- In the third case (0414-1), tug speed was 9.1 knots, but no cause for the slower speed was discerned.
- In the last case (0421-1), tug speed was 9.4 knots, into southerly winds of 25 knots. During the initial part of the response the tug was traveling into a predicted current of about 0.7 knots.

The data collected by the *Barbara Foss* regarding environmental conditions had its limitations. Notably, the record for each deployment includes only a single entry for wind, wave, swell and current and it was therefore assumed that conditions recorded were representative for the entire outbound tug transit. In addition, tidal current observations were not recorded as consistently as other environmental conditions. Therefore, the maps contained in Appendix H display tidal current based on predicted values for locations in the Strait of Juan de Fuca.

An analysis of the rescue tug's underway and effective speeds was also done by distance categories corresponding to the same categories contained in the U.S. Coast Guard's 1999 Interim Rescue Tug Report (see Appendix I). Analysis indicated that, as would be expected, both underway and effective speeds increased with longer travel distances as the tug's best speed running in open waters pushed-up the averages (see Figure 7).

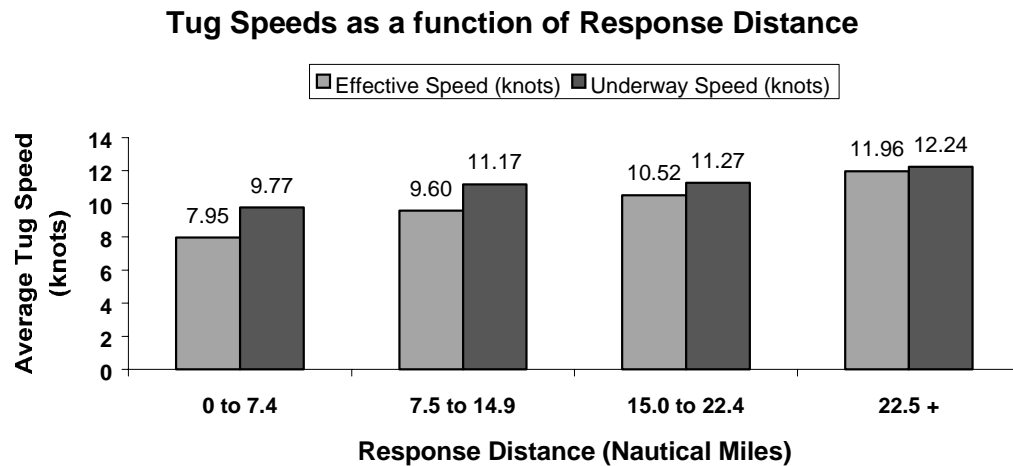


Figure 8

## Neah Bay as a Rescue Tug Base

Foss Maritime Company provided the following summary comment regarding the feasibility of Neah Bay as a mooring and staging site for a rescue tug.

*“During the test period, Foss Maritime Company, unequivocally demonstrated that Neah Bay is an excellent location for mooring and staging a tug like the Barbara Foss. Additionally, logistical support for all but fuel and lube re-supply and major marine repairs was satisfactory. The Makah Tribal council members, residents, local vendors and Port managers deserve credit for their assistance and cooperative attitude during our stay.”*

Additional information can be found in Foss’ report, located in Appendix J.

# VII. Findings & Recommendation

## Findings

### Oil Spill Risk May Increase

The risk of oil spills is expected to increase. A recent Coast Guard study estimated that the current probability of an oil spill over 10,000 gallons in Puget Sound is one in five years. This risk will increase to one in 3.6 years by 2025, driven by larger volumes of oil and more vessel traffic.

### Rescue Tugs Protect Other Sensitive Coastlines

In many areas of the world, communities with sensitive coastlines have stationed large, highly capable rescue tugs as an effective protection measure. Alaska, several countries in northern Europe, South Africa and Japan all provide this extra margin of safety for their environment.

### Community Supports Government-funded Tug

A majority of stakeholders participating in the North Puget Sound Long-Term Oil Spill Risk Management Panel voted in favor of a year-round, government-funded, dedicated rescue tug as a risk management measure. But due to the Panel's voting procedure, the measure did not pass as a recommendation. The Strait of Juan de Fuca/Northern Puget Sound Regional Marine Safety Committee, also representing diverse interests, also supported the rescue tug concept, as did the Emergency Towing System Task Force.

### Federal Responsibility to Fund Tug

The federal government should provide the bulk of funding for the tug based upon the following premises:

- The federal government is a *trustee of natural resources* in the area, including the Olympic National Marine Sanctuary, Olympic National Park, and the coastal national wildlife refuges;
- The federal government *has designated certain species found in the area as threatened and endangered*. These species and their habitats would be affected by major oil spills;
- The federal government has a responsibility to *protect the treaty rights of Puget Sound tribes* in their usual and accustomed fishing areas;
- Washington is meeting a regional energy supply need. The North Puget Sound marine transportation corridor contains a regional crude oil refining center and is a *conduit of refined petroleum products to other western states*;
- The Strait of Juan de Fuca *conveys more tonnage of cargo to and from Pacific Rim ports* than any other West Coast waterway;

- Puget Sound is *homeport* for a large portion of the nation's strategic naval fleet, which also poses a risk of major spills; and
- There is *potential for international tension with Canada* should a major transboundary oil spill occur in this waterway.

## **Actual Cost Lower than Estimated Cost**

The \$1.65 million provided by the Washington Legislature was enough funding to station a rescue tug at Neah Bay for eight months of the 2000-2001 winter season. By extrapolation, contract tug coverage on an annual basis might be obtained for as little as \$2.5 million. If it was determined that a more powerful tug would be best, Ecology believes one could be secured for approximately \$3 million per year, based on recent procurement experience.

The *Allocation of Tug Costs on a "Per Transit Basis"* and Regulatory Assessment studies estimated the costs at \$3.4 million to \$6 million for a 5,500 or 10,000 horsepower tug. While the *Barbara Foss* is less powerful than called for by the Emergency Towing System Task Force (100 to 150 tons pulling power), it does meet the minimum power criteria proposed in the report for the Canadian Ministry of the Environment (70 tons pulling power).

## **Rescue Tug Shown to be Effective**

Actual experience during the last three seasons demonstrated:

- A dedicated rescue tug is capable of rapid response. The tugs were able to get underway within 15 minutes and maintained an average speed of 11.3 knots. Factoring in the time to get underway, the effective speed was 10.2 knots.
- Neah Bay is an effective base of operations. Foss Maritime was complimentary of the facilities and the support of the Makah Tribe.
- Sea state only minimally affected the rescue tug speed. Environmental conditions affected tug speed in only three cases out of 30 during the 1999-2000 season.

## **Recommendation**

Ecology recommends that state funding be provided to station a rescue tug at Neah Bay while federal funding is pursued. Specifically, Ecology recommends that the legislature provide \$3 million in stopgap funding for the 01-03 Biennium to provide the rescue tug for approximately 12 months.

If long-term federal funding does not become available, the state would have the option to proceed with rulemaking. The rulemaking process would determine whether vessels transiting the northern coast and western Strait of Juan de Fuca should have a user-fee-supported rescue tug available during their passage.



## VIII. Endnotes

<sup>1</sup> The term “rescue tug” refers to an Emergency Towing Vessel with additional capability to respond to other types of emergencies.

<sup>2</sup> Engrossed House Bill 2497, page 119.

<sup>3</sup> 1997 Puget Sound Risk Assessment Expert Panel for the Scoping Risk Assessment

<sup>4</sup> The Office of Marine Safety was merged into the Department of Ecology in July 1997. It became part of the Spill Prevention, Preparedness, and Response Program.

<sup>5</sup> *Regional Marine Safety Committee Safety Plan & OMS Response: Strait of Juan de Fuca, Northern Puget Sound.* June 1994.

<sup>6</sup> *An Oil Spill Prevention Proposal for A Dedicated Rescue Tug to Protect the Strait of Juan de Fuca and Adjacent Pacific Coast: Final Report of the Emergency Towing System Task Force for the Washington State Office of Marine Safety.* August 1994.

<sup>7</sup> *A Review of Escort, Rescue and Salvage Towing Capability in Canadian Waters.* Robert Allen Ltd. And D. F. Dickens Associated Ltd. April 1995.

<sup>8</sup> *Analysis of the Geographic Coverage Provided by the International Tug of Opportunity System from November 1998 to May 1999.* August 30, 1999.

<sup>9</sup> Herbert Engineering Corporation. Report No. 9939-001. February 16, 2000.

<sup>10</sup> Based on linear regression analysis with highest R-squared value found to be 0.13. The 30 deployments represented a small sample size.

<sup>11</sup> R-squared values ranged from 0.0025 to 0.49, with even smaller sample sizes.



**Neah Bay Rescue Tug:**  
***Report to the Washington State Legislature***  
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